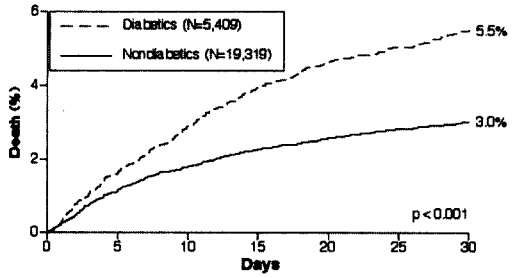
of 30-day mortality among diabetics. **Conclusions:** Despite the contemporary management, diabetic patients with non-ST-segment elevation acute coronary syndromes have almost doubled 30-day mortality than nondiabetics.




9:30 a.m.

840-5 **In-Hospital Outcome of Acute Myocardial Infarction in Patients With Prior Coronary Artery Bypass Surgery: A Study From NRMI 3**

Verghese Mathew, Bernard J. Gersh, Hal Barron, Nathan Every, Alan Tiefenbrunn, Paul Frederick, Judith Malmgren, For the NRMI Investigators, *Mayo Clinic and Foundation, Rochester, Minnesota.*

Background: Patients with coronary artery bypass grafting (CABG) comprise an increasing proportion of acute myocardial infarction (MI) patients. Data regarding the influence of prior CABG on survival after MI is discordant; the influence of sinus tachycardia (ST) segment shift (ST elevation vs non-ST elevation) on outcome has not been examined in this population. We sought to describe the characteristics of patients with and without prior CABG presenting with acute MI, with or without ST segment elevation/left bundle branch block (LBBB), and to evaluate the effect of ST segment shift on in-hospital mortality in patients with prior CABG.
Methods: Utilizing the NRMI-3 Registry, we identified 112,697 patients with acute MI without exclusion criteria. Of these, 15,936 (14.1%) had prior CABG.
Results: Patients with prior CABG had more adverse baseline characteristics, and were less likely to present with ST elevation/LBBB than patients without prior CABG. The unadjusted mortality for ST elevation/LBBB patients was higher in patients with prior CABG compared to those without (16.2% vs 14.1%, P=0.0001) whereas in patients without ST elevation/LBBB, prior CABG patients had a lower unadjusted mortality than patients without prior CABG (10.1% vs 12.4%, P=0.0001). Adjusting for baseline differences, prior CABG was weakly associated with in-hospital mortality in patients presenting with ST elevation/LBBB (odds ratio (OR), 1.11, 95% confidence intervals (CI) 1.00-1.23), whereas prior CABG did not correlate with in-hospital mortality in patients presenting without ST elevation/LBBB (OR 0.99, 95% CI 0.92-1.07).
Conclusion: Patients with prior CABG who present with acute MI are more likely to present without ST elevation/LBBB, as compared to patients without prior CABG. Prior CABG was weakly associated with in-hospital mortality in patients with ST elevation/LBBB, but did not influence in-hospital mortality in patients without these electrocardiographic findings. This suggests the difference in absolute mortality rates between patients presenting with MI with and without a history of prior CABG are in large part due to differences in baseline characteristics.

9:45 a.m.

840-6 **Cardiovascular Manifestations of Carbon Monoxide Poisoning**

Daniel Satran, Christopher R. Henry, Caren I. Chaney, Cheryl D. Adkinson, Timothy D. Henry, *Hennepin County Medical Center, Minneapolis, Minnesota, University of Minnesota, Minneapolis, Minnesota.*

Carbon monoxide (CO) poisoning is a common cause of morbidity and mortality. While the neurologic sequelae of CO poisoning have been described, the cardiovascular complications are limited to isolated case reports. Methods: We reviewed the cardiovascular manifestations of 216 consecutive patients(Pts) treated for severe CO poisoning in the hyperbaric oxygen chamber at Hennepin County Medical Center, a regional center for treatment of CO poisoning. Results: The mean age was 47.2 years. 35 (16.4%) Pts had a normal baseline EKG; 94 (44.1%) sinus tachycardia; 85 (39.9%) non-specific ST changes; 63 (29.6%) ischemic changes, including 53 (24.8%) with dynamic ST or T wave changes and 10 (4.7%) with ST elevation. Of the 171 pts with cardiac enzymes, 75 (34.7% of the total) were diagnostic of myocardial injury (CK-MB mass >5.0 ng/ml or troponin I >0.7 ng/ml). An additional 4 pts had EKG changes diagnostic of myocardial injury, but without cardiac enzymes. Of the 49 pts with echocardiograms, 27 (55.1%) had decreased left ventricular (LV) function. Of those 27, 14 had global wall motion abnormality (WMA), and 13 had regional WMA. An additional 15 had RV dysfunction. In hospital mortality was only 3.7% (n=8), the most common cause being anoxic brain and burn injury (n=5). 3 Pts had an out of hospital cardiac arrest leading to anoxic brain injury and death. Two clear patterns of myocardial injury were identified. Older Pts with cardiac risk factors or previous CAD were more likely to have regional WMA with myocardial injury related to CAD. In contrast, another group was younger, without evidence of CAD, and more likely to have reversible global LV dysfunction. Conclusions: This is the first systematic description of cardiovascular manifestations of CO poisoning. Cardiovascular sequelae of severe CO poisoning are frequent (36.6% with myocardial injury) and often unrecognized but mortality is related to noncardiac causes. Pts admitted with severe CO poisoning should have a baseline EKG and serial cardiac enzymes. Pts with EKG changes or elevated enzymes should have an echocardiogram. Pts with myocardial injury in association with cardiac risk factors, previous CAD or persistent LV dysfunction deserve further evaluation.

ORAL CONTRIBUTIONS

## 841 Acute Coronary Syndromes: Clinical Outcomes

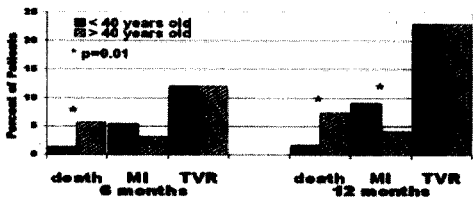
Tuesday, March 19, 2002, 8:30 a.m.-10:00 a.m.
Georgia World Congress Center, Room 160W

8:30 a.m.

841-1 **Outcome After Acute Myocardial Infarction in Young Patients: Analysis of the PAMI Database**

Roberto A. Corpus, Jr., Judith A. Boura, Gregg W. Stone, Bruce R. Brodie, David A. Cox, Eulogio Garcia, Lori L. Grines, William W. O'Neill, Cindy L. Grines, *William Beaumont Hospital, Royal Oak, Michigan.*

**Background:** Acute myocardial infarction (AMI) in patients (pts) ≤ 40 years old (y/o) is uncommon. Few data exist regarding the outcome of these pts after percutaneous intervention (PCI) for AMI.
**Methods:** This analysis pooled pts from 7 PAMI studies for a total of 4017 pts. Pts ≤ 40 y/o (N=171) were compared to pts > 40 y/o (N=3846). In-hospital, 6 month and 1 year outcomes are reported.
**Results:** Younger pts were more often male and had a significantly higher incidence of smoking and family history of CAD, but a lower incidence of hypertension, diabetes, stroke, and prior coronary intervention compared to pts > 40 y/o. Younger pts had larger infarct sizes as measured by peak CPK (2974 vs. 2016, p=0.003) but no significant difference in ejection fraction at baseline (50% vs. 48%) or 6 months (54% vs. 55%) compared to older pts. Younger pts had less multivessel disease (p<0.001) and greater achievement of TIMI 3 flow (99% vs. 92%, p=0.006) after PCI. While pts ≤ 40 y/o had less mortality compared to older pts, recurrent AMI was significantly higher in the younger population (p=0.012).




In multivariate analysis, age ≤ 40 was the most significant predictor of re-infarction at 1 year (OR=3.62 [95%CI: 1.794-7.296], p=0.0003.
**Conclusions:** While pts ≤ 40 years old have improved survival after AMI, they have an increased rate of nonfatal re-infarction at 1 year compared to older pts. These data suggest the need for comprehensive diagnostic evaluation, aggressive risk factor modification, and intensive follow-up in young pts with AMI.

8:45 a.m.

841-2 **Interleukin-1 Beta Predicts Death or Myocardial Infarction Independently of High-Sensitivity C-Reactive Protein and Standard Risk Factors in Patients With Coronary Artery Disease**

Jason M. Lappe', Joseph B. Muhlestein, John F. Carlquist, Brent P. Davis, Benjamin D. Horne, Jeffrey L. Anderson, *LDS Hospital, Salt Lake City, Utah, University of Utah, Salt Lake City, Utah.*

**Background**: Interleukin (IL)-1 beta, tumor necrosis factor alpha (TNFalpha) and IL-6 are important proinflammatory cytokines. IL-6 is produced in response to IL-1 and TNFalpha and is one of the major inducers of C-reactive protein (CRP). Elevated high-sensitivity (hs)CRP is associated with an increased risk of death and MI in patients with CAD.The objective of this study was to determine whether IL-1, IL-6 or TNFalpha also independently predict death or MI in CAD patients.
**Methods**: A nested case control study evaluating levels of IL-1 beta, IL-6, TNFalpha, and hsCRP (measured on the automated DPC Immulite platform) in 334 patients with significant, angiographically-proven coronary artery disease (>1 lesion of ≥70% stenosis) was performed. Overall, 167 patients died or had an MI (cases), and 167 patients were event-free (controls). Cases were matched 1:1 to controls by age, gender, and time period of angiogram. Other cardiovascular risk factors were recorded and patients followed for 3.6±0.75 years (range: 2.0-5.0 years).
**Results**: Average age was 69.6±9.9 years and 74% of patients were male. In multivariable Cox regression controlling for 11 co-variables, hsCRP (hazard ratio [HR]= 1.24 per tertile, 95% confidence interval [CI]= 1.02-1.5, p=0.03) and IL-1 beta (HR=1.32 per tertile, CI= 1.08-1.6, p=0.008) were independently predictive of death/MI, but IL-6 (p=0.36, tracked with hsCRP) and TNFalpha (p=0.97) did not predict events. IL-6 and hsCRP were mildly correlated (r=0.38) and IL-1 beta nominally correlated with TNFalpha (r=0.24). No cytokine nor hsCRP was correlated with cholesterol levels. When analyzed jointly, having a high hsCRP (tertile 2,3) and high IL-1 beta (tertile 3) predicted a marked increase in events (HR=5.3, p<0.001) compared to low hsCRP (tertile 1) and low IL-1 beta (tertile 1).